

The forgotten 20 percent: Achievement and growth in rural schools across the nation

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KEY FINDINGS

- Kindergarten math and reading achievement is slightly higher in rural than non-rural schools, but by third grade, this advantage fades, and non-rural students increasingly outperform rural students from grades 3 to 8.
- This shift is likely driven by significantly larger learning loss for rural students during summers, not within school-year growth patterns.
- Rural schools farther from urbanized areas had higher summer learning loss and lower achievement than schools closer to urban centers.
- Achievement gaps are larger in non-rural schools than in rural schools.

About one in five students in the US attends a rural school, and over half of all school districts are in rural areas.ⁱ And yet we know very little about achievement, achievement gaps, and academic growth in rural schools, including how school-year and summer changes in achievement may differ in these schools. This lack of information is troubling, since rural schools and students have both unique challenges and advantages that could impact their academic outcomes, and because the federal government and states are making considerable and increasing financial investments in rural schools. The intent of our study is to provide a descriptive overview of academic achievement and growth among rural schools so educators and policymakers can better understand the potential needs of rural schools.

Rural students, schools, and communities have unique challenges that could hinder academic achievement and growth. For example, rural students often travel considerable distances to school, which can contribute to fatigue and reduced learning time.ⁱⁱ The costs of operating transportation systems can affect school/district budgets and drain resources.ⁱⁱ Teacher quality can also be impacted: remoteness of schools can create difficulties for teacher recruitment and retention, and professional training for teachers in rural schools is less abundant, so teachers in these schools tend to be less credentialed.ⁱⁱⁱ These teacher labor supply issues and a lack of resources can also affect students' access to curriculum. For instance, advanced coursework is much less abundant in rural schools. In general, rural schools often lack the facilities, infrastructure for operation and maintenance, course materials, and educational programs that typify larger districts. This is partly due to limited access to funding. Some federal and state formulas distribute funds based on enrollment or concentration of low-income students, which can put rural districts at a disadvantage since they are smaller.^{iv} In addition to these issues specific to schooling, students in rural locations may also face challenges

outside of school, including fewer cultural resources such as libraries and museums.^v

But rural students and schools also have unique advantages: smaller, rural communities are often tight-knit, so educators may have closer relationships with students and their families, leading to a better understanding of individual learning needs.^{vi} Researchers have also shown that effective schools tend to have a strong collective identity, and that rural schools often have a consistent and clearly defined identity conducive to effective teaching and learning.^{vii} Non-school factors also may be advantageous: schools in rural locales are often safer and less affected by violence than schools in urban centers.^{viii}

Despite these important differences that could meaningfully impact student achievement and growth, rural schools and students are too often overlooked in education policy and research. Many factors contribute to this: rural students are geographically dispersed, making it difficult to target and effectively change their learning circumstances. Further, evaluation and intervention studies often take place in large urban districts, and most published research does not report how results differ between urban and rural locales.^{ix} The existing research that has focused on rural schools often is limited to a single state or to a few points in time. These limitations mean educators and policymakers do not have insight into how students in rural schools grow academically during elementary and middle school or how summer learning loss affects students in rural schools.

Considerable research has highlighted seasonal learning patterns, with gains during the school year followed by flattening or dropping of test scores over the course of summer breaks.^x It seems likely that summer loss could differ in rural locales compared to urban and suburban locales: the lack of teaching and programmatic resources in rural schools and limited access to cultural

resources could mean fewer academic options are available to students during the summer, leading to greater learning loss. On the other hand, tight-knit rural communities may provide better supports for students during the summer, and agricultural activities could contribute to the development of academic skills related to subjects like math. Yet, to date, summer loss has not been examined in rural schools.

Research has also shown that growth over time, including summer loss, can affect race-based achievement gaps, especially whether they narrow or widen as students move through school.^{xi} However few studies examined how achievement develops differentially by race in rural communities. Evidence suggests segregation is at least as substantial in rural communities as in metropolitan communities^{xii} and that racial discrimination may be different by locale and more variable in rural locations.^{xiii} These societal factors that extend beyond schooling could affect rural students' opportunities to learn, but previous research on rural education generally provides little evidence on gaps and how gaps develop in rural locales. Understanding the development of gaps can be essential to reducing them.

Using data from NWEA's MAP® Growth™ assessment in reading and mathematics from about 840,000 students in 8,798 public schools across the US, including 180,000 students attending 2,377 rural schools, our study addressed three questions:

1. How does achievement compare between rural and non-rural schools in each grade between kindergarten and eighth grade?
2. How do school-year and summer growth rates compare between rural and non-rural schools?
3. Are achievement gaps between Black or Hispanic students and White students similar between rural and non-rural schools, and how do those gaps develop during school years and summers?

Assessment data are from 2013-2014 to 2018-2019. We followed two cohorts of students (about 300,000 students in grades K-5 and about 540,000 students in grades 3-8) to span the nine grades (K-8). Schools were identified as rural based on their NCES Common Core of Data locale code.

Rural schools included in this study include:

Rural-Fringe: closest to an urbanized area (within 5 miles),

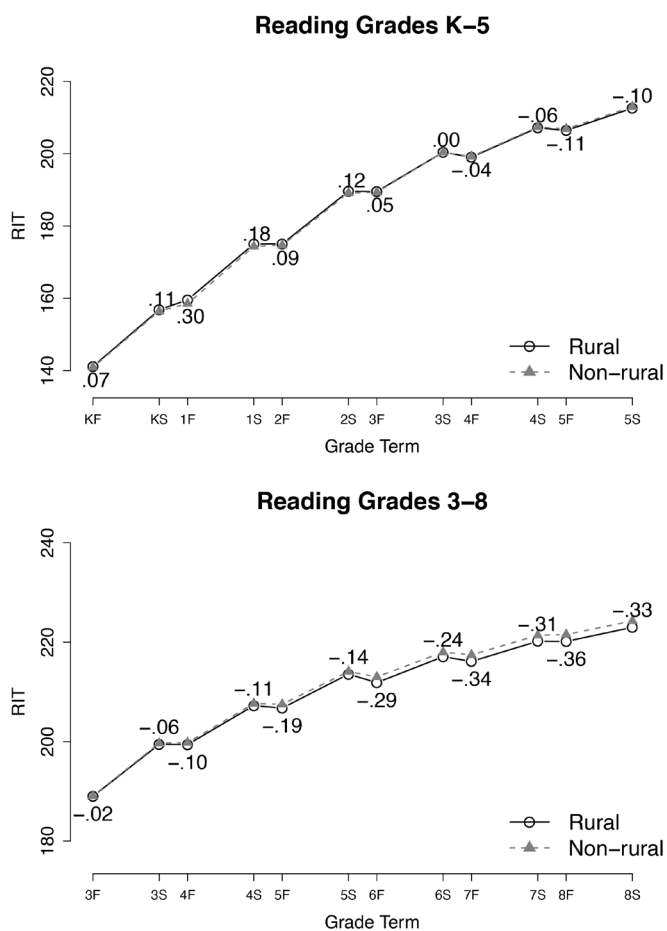
Rural-Distant: (between 5 and 25 miles),

Rural-Remote: farthest from an urbanized area (25 to 50 miles).

How remote schools are from urban areas is an important way rural schools can differ from each other. For instance, rural schools closest to urbanized areas tend to have enrollment sizes, poverty rates, and eighth grade math course access and math proficiency rates similar to suburban schools, while the most remote rural schools have much smaller enrollment, higher poverty rates, and lower levels of advanced math access and proficiency rates. So, we also examined variation across these locales of rural schools in our study. All other schools, including schools in cities, suburbs, and towns, were grouped as “non-rural” schools for our analyses.

Kindergarten math and reading achievement is slightly higher in rural than non-rural schools, but this advantage fades by the end of grade 3. Non-rural students increasingly outperform rural students from grades 3 to 8.

Rural vs. Non-rural Standardized Achievement Gaps 2013-14 to 2018-19, by Cohort



Note. The reported numbers are the standardized mean differences between rural and non-rural students within each grade/term. Differences are in SDs and positive differences favor rural students. See [journal article](#) for results in math, which show a similar trend.

Comparing average achievement scores across grades for students in rural and non-rural schools, we found that academic achievement in both math and reading started slightly higher in kindergarten in rural than non-rural schools, but that this early advantage reversed in third grade. From third to eighth grade, non-rural students increasingly outperformed rural students (with differences expanding 0.02 to 0.09 SDs for reading and similar results in math).¹

Achievement patterns vary by remoteness of schools.

Among groups of rural schools, Rural-Fringe schools, the closest to urbanized areas, consistently had the highest achievement scores across subjects, grades, and terms, while Rural-Remote schools had the lowest achievement scores among rural locales across most grades and terms. This pattern was not surprising, since prior research showed that Rural-Fringe schools had the highest percentage of students who met NAEP proficiency thresholds among rural schools.^{xiv} Schools in our sample in this group also had the lowest poverty rates, largest enrollments, and highest percentages of students of color.

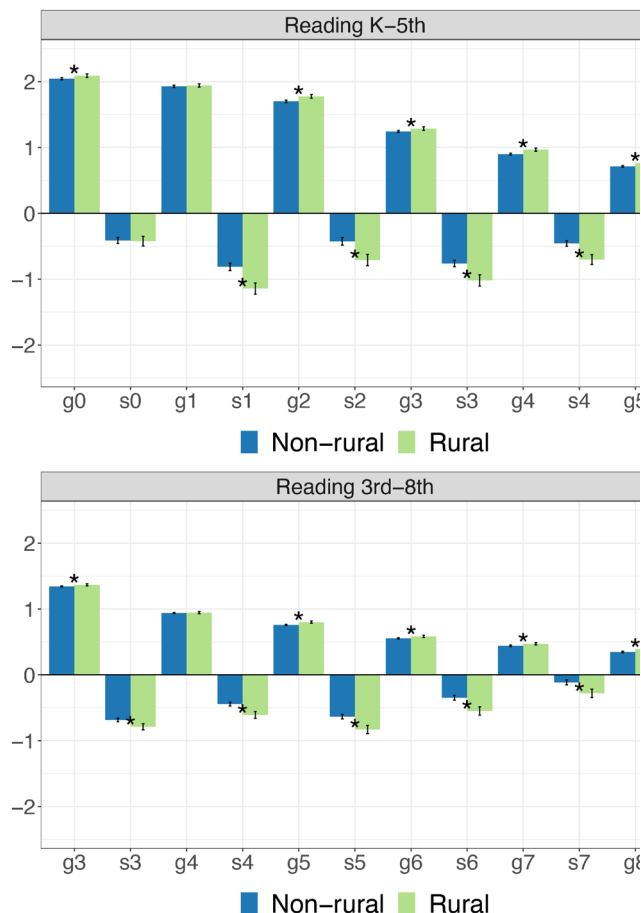
Rural students grow slightly more than non-rural students during school years but show significantly more summer learning loss than non-rural students.

Analyses of monthly growth rates in math and reading achievement revealed that most of the eventual gap between rural and non-rural students in middle school is driven by larger declines in achievement during summer breaks for rural students. In both math and reading, rural students tended to grow slightly more than non-rural students during the school years. But rural students showed significantly more summer learning loss than non-rural students in almost all summers, eliminating any advantage from the slightly higher school-year monthly growth.

Among the three rural locales, Rural-Distant schools tended to have the largest summer learning loss rates in both math and reading across grades.

Achievement gaps are larger in non-rural schools than in rural schools.

In all grades, gaps between Black and White students were larger in non-rural schools than rural schools, and as much as 0.25 SDs larger in some grades and subjects. In math, Black students tended



School Year and Summer Growth Rates in Rural and Non-rural Schools, shown in RIT units per month. Note. g0=Kindergarten monthly growth rate, g1=first grade monthly growth rate, s0=summer after kindergarten monthly growth rate, s1= summer after first grade monthly growth rate, etc. See [journal article](#) for results in math, which show a similar trend.

to grow less than White students in most school years in both rural and non-rural schools. In reading, Black students in both rural and non-rural schools grew less than White students from kindergarten to fourth grade, but Black students grew at a similar or higher rate than White students from fifth to eighth grade. This additional evidence that Black-White achievement gaps widen during the school year and narrow during the summer in both rural and non-rural schools may perhaps be surprising but has also been shown in other studies.^{xi}

In math, non-rural Hispanic students grew less than non-rural White students, and rural Hispanic students grew at rates similar to rural White students. In reading, both rural and non-rural Hispanic students grew less than their White

¹ For consistency, these gaps are presented in third grade fall standard deviations.

counterparts during kindergarten to second grade but grew at similar or higher rates than White students in third grade and later.

Further research is needed to understand the school processes that may contribute to systemic inequities in rural schools.

Our findings provide educators and policymakers with a rare, extensive view of achievement in rural schools and may suggest opportunities for targeted investment in those schools.

RECOMMENDATIONS

Communicate the importance of, and work to expand access to, summer learning opportunities for rural schools and students.

This research showed, for the first time, that most of the eventual gap between rural and non-rural students shown in middle school may be attributed to larger declines in achievement during summer breaks for rural students. So, summers could be an important time for interventions to help rural students. Access to high-quality summer programs continues to be a challenge for rural students, with parents reporting unmet demand for programs in rural communities.^{xv} Our results highlight the larger summer learning loss among rural students, indicating the possible need for investment in summer enrichment programs in rural communities. Rural schools, especially those farther from urbanized areas, should be supported with resources to develop summer programming to help students maintain and build on academic skills acquired during the school year. Resources should also be provided to local communities to engage students in activities that apply and supplement their in-school learning. For example, prior research has shown that library outreach programs like bookmobiles have positive impacts on the academic development of economically disadvantaged rural children and suggested the expansion of services that deliver cultural resources to rural families.^y Future research should investigate the effects of such programs on summer learning across various rural contexts.

Consider remoteness and other variation across rural schools in policy decisions.

Our results showed that Rural-Distant schools, which are farther from urbanized areas than Rural-Fringe schools, had the highest summer learning loss rates among all rural schools. Our findings confirm that the needs of rural schools differ by school characteristics, including distance. That remote schools face the challenge of lower achievement scores and larger summer learning loss may suggest that interventions are needed throughout the year to improve access to resources and expand learning opportunities for students far from urban centers.

Rural schools should not be forgotten in research and policy.

Our results underscore the importance of tracking student progress in rural schools to help policymakers make decisions about resource allocation. Our data allowed for the estimation of separate growth trends within the school year and during the summer. We highlighted that the summer period could be an important time for interventions to help rural students, and that achievement gaps change differentially within versus between school years.

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ABOUT THE COLLABORATIVE FOR STUDENT GROWTH

The Collaborative for Student Growth at NWEA is devoted to transforming education research through advancements in assessment, growth measurement, and the availability of longitudinal data. The work of our researchers spans a range of educational measurement and policy issues including achievement gaps, assessment engagement, social-emotional learning, and innovations in how we measure student learning. Core to our mission is partnering with researchers from universities, think tanks, grant-funding agencies, and other stakeholders to expand the insights drawn from our student growth database—one of the most extensive in the world.

